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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,064	10/23/2003	Phillip W. Barth	10021090-1	2224

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AGILENT TECHNOLOGIES, INC.
Legal Department, DL429
Intellectual Property Administration
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Loveland, CO 80537-0599

EXAMINER

DANG, TRUNG Q

ART UNIT	PAPER NUMBER
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2823

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/693,064	BARTH, PHILLIP W.	
	Examiner	Art Unit	
	Trung Dang	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 27-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-11, 13-18 and 21-26 is/are rejected.
- 7) ☒ Claim(s) 5, 12, 19 and 20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/23/03</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of the Group I invention, claims 1-26 in the reply filed on 2/10/05 is acknowledged. The traversal is on the ground(s) that the examination of the claims of Group II invention together with the claims of the Group I invention should impose little, if any, additional burden on the Examiner. This is not found persuasive because such allegation relied on the unsupported assumption that the search and examination of the two group would be coextensive. However, the issues of product and method claims are divergent. Furthermore, there may be some overlap in the searches of the two group, but there is no reason to believe that the search would be identical. Therefore, based on the additional work involved in searching and examination of the two distinct inventions together, restriction of distinct inventions is clearly proper.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-4, 6-11, 13, 15, 17, and 21-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Bloom et al. (US 6,863,833).

With reference to Fig.1A and its description, the prior art teaches a nanoaperture chip comprising:

- a first region comprising a diagram 16, the diagram comprising a silicon nitride material, the diagram having a top surface and a bottom surface;
- a substrate region 18 comprising a semiconductor material supporting the first region 16, the semiconductor material comprising a rigid frame laterally surrounding the diagram (Fig. 1B);
- a substrate cavity region 36 beneath the diagram;

a third region 12 comprising a third insulator material, the third region being disposed atop the diagram, the third region 12 being substantially thicker than the diagram 16 and having a third cavity 22 therethrough exposing a portion of the top surface of the diagram, the exposed portion of the top surface of the diagram being suitable for fabrication of one of a microscale and a nanoscale device 24 (see col. 5, lines 38-39 for the nanoaperture as small as a few nm to a mm in diameter. See col. 7, lines 31-33 for the material of the diagram 16).

For claim 4, after the substrate cavity 36 is formed, the exposed semiconductor is oxidized to form about 1.1 micron of oxide (col. 9, lines 23-26, col. 10, lines 52-55, and 7), thus an oxide layer is formed on the sidewall 38 of the recess 36, which oxide layer reads on the claimed second region.

For claim 6, the oxide layer noted above reads on the claimed fifth material.

For claim 7, silicon nitride layer 20 reads on the claimed sixth region because the term "atop" is a relative term depending on the orientation of the structure. For example, when the structure of Fig. 1A is rotated upside down, layer 20 becomes atop substrate 18.

For claims 24 and 25, see Fig. 1C and col. 6, lines 44-61 for the claimed electrical lead.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14, 16, 18, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over bloom et al. as above in view of Fishman et al. (US 2003/0032946).

Bloom teaches a structure as described above, except for the thicknesses of the diagram 16, the third region 12, the second region (the oxide layer mentioned above). However, the determination of such thicknesses would have been obvious to one of ordinary skill in the art because it is well settle that the difference in thickness will not support the patentability of the subject matter encompassed by the prior art unless there is evidence indicating such thickness is critical. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation.” See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); *Merck & Co. Inc. v. Biocraft*

Laboratories Inc., 874 F.2d 804, 10 USPQ2d (Fed.cir), cert. denied, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997). Furthermore, the specification contains no disclosure of either the critical nature of the claimed thickness range or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in the claim, the applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d, 1575, 1578, 16 USPQ2d, 1936 (Fed. Cir. 1990).

For claims 24 and 26, Bloom differs from the claim in not disclosing a microfluidic lead as claimed. Fishman teaches a microfluidic channel 76 that is integrated with a nanoaperture chip similar to that of Bloom to provide fluid flow to and from recess 36 and nanoaperture 24 (para. [0112] and Fig. 7B).

It would have been obvious to one of ordinary skill in the art to modify the teaching of Bloom by intergrating the microfluidic channel 76 comprising microfluidic leads 80, 82 as suggested by Fishman because doing so would form a mean to provide fluid to recess 36 of the nanoaperture chip 10.

Allowable Subject Matter

5. Claims 5, 12, 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

Claims 5, 12, 19-20 are objected because prior art of record does not teach or suggest the claimed structure regarding a fourth region as set forth in the claims.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Dang whose telephone number is 571-272-1857. The examiner can normally be reached on Mon-Friday 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR

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only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Trung Dang', with a stylized, cursive script.

Trung Dang
Primary Examiner
Art Unit 2823

4/15/05